

Need More Sleep

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Almost without fail, the human factor most frequently discussed in aviation operations is fatigue. This problem isn't unique to aviation alone, however; the physiological and psychological stressors associated with rotating work hours, cumulative operational fatigue and sleep loss affect every Soldier's performance. This article only briefly defines fatigue as part of rotating operations and sleep deprivation, but I challenge you to take stock in measures to mitigate the hazards created by too-tired Soldiers.

How is our sleep cycle established? Circadian rhythms are natural, periodic oscillations in human function based on a 24-hour cycle. The circadian system functions as an internal clock that sets the time for sleep and wakefulness. We reset our internal clocks every day by getting up at the same time, reporting to work at a given repetitive time and, more importantly, by being exposed to sunlight at these times. Coupled with your own schedule, the sun is the key to maintaining circadian rhythm.

A desynchronized circadian system is similar to a symphony orchestra without a conductor. Many factors can desynchronize the circadian system, including alterations in biologic function such as diet or sleep, maladapted environmental cues such as light, temperature, noise or vibration, and social influences like drugs, alcohol or stress. Circadian disharmony results in symptoms of malaise and fatigue as well as certain gastrointestinal problems. In time, sleep loss and workload pressure adversely interact with an individual's circadian rhythm to reduce their reaction time, decrease vigilance and distort cognitive thinking and perceptual function.

What constitutes restorative sleep? Sleep is like food and water in terms of a basic human requirement. Restorative sleep is defined by four cycles of stage 1 to 4 sleep and one cycle of REM, or dream state, sleep. Sleep efficiency varies between individuals and circumstances; however, as a general rule, a restorative sleep cycle can occur within five to six hours of continuous sleep.

Are you challenged with rotating shifts? Constantly changing work shifts, such as quick reaction force or night duty, challenge the body to make circadian adjustments. Studies show it takes one day for each hour shifted into the work zone. Obviously we can function during this transition period, but we're less than efficient and proficient in our mental and physical performance. Such schedule adjustments maximize human error between 2330 and 0130 Zulu on your night-adjusted clock. When you're adjusted to your new schedule, however, avoid or minimize morning exposure to sunlight. Too much exposure will desynchronize your night-adjusted clock.

Is there any rest for the weary? In the 1990s, NASA introduced a program called "Alertness Management." NASA scientists linked the long-haul requirement of space flight with the real-world challenges of sleep management and safety in operations. NASA scientists demonstrated that when individual sleep requirements were not met daily, a



sleep debt accumulated. They further determined this sleep debt could be paid off in small installments over time, which is the concept behind fighter management. Finally, they described the “NASA nap” as part of an optimal system of fatigue countermeasures. The NASA nap lasts exactly 40 minutes and takes full advantage of all four sleep stages, but be sure to avoid all naps—however short—within four hours of an approaching sleep cycle.

What are the best measures to stay awake?

Caffeine is the supplement of choice for most people, but timing is important. Never consume caffeine within four hours of an approaching sleep cycle because it will probably keep you awake. Conversely, carbohydrates and sugary foods induce sleep, but small meals or snacks rich in protein or fiber are proven stop-gap measures to fight off fatigue. Don’t forget about exercise, which is your body’s natural way of creating energy stores for later use. Maximize your health and fitness with 30- to 40-minute installments of exercise most days of the week, and hydrate regularly with water. Aggressively manage boredom with physical and mental activities on the job. Get up and walk around if you’re feeling tired for an instant energy boost. Operational mission requirements in Iraq and Afghanistan will press unit leaders and their Soldiers to manage workloads under recurrent cycles of fatigue. Fighter management and the countermeasures listed here are vital steps in safeguarding the goal to “finish strong” and “finish safe.” Always lead on the edge, but get a good night’s (or day’s) sleep first!